

PATENT ABSTRACTS OF JAPAN

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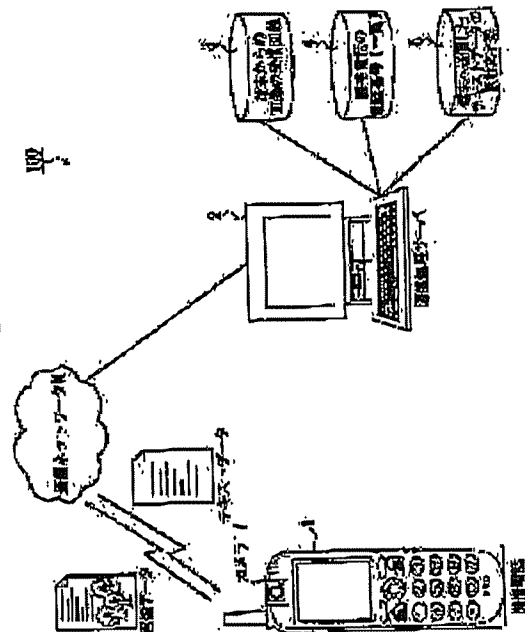
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(54) PORTABLE TERMINAL DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a portable terminal device which is convenient for obtaining character information and by which the obtained character information can be utilized quickly.
SOLUTION: A portable telephone set 1 displays image data of an object photographed by a camera 17 on a display part, the range of a character area included in this image data is designated by a key input part, and this image data and the range information of the designated character area are transmitted to an image processing server 2 via a communication network N. Then, the server 2 recognizes the characters included in the image data received from the telephone set 1 by a character recognition function contained in its inside, converts the characters into text data and transmits this text data to the telephone set 1, which receives the text data transmitted from the server 2.



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3.In the drawings, any words are not translated.

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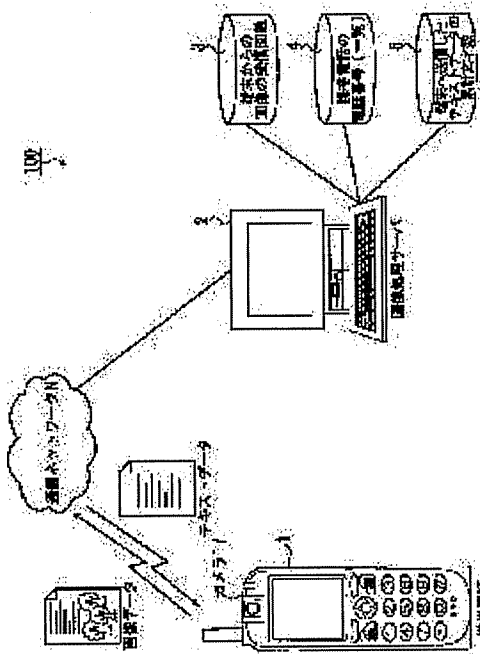
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SOLUTION: A portable telephone set 1 displays image data of an object photographed by a camera 17 on a display part, the range of a character area included in this image data is designated by a key input part, and this image data and the range information of the designated character area are transmitted to an image processing server 2 via a communication network N. Then, the server 2 recognizes the characters

included in the image data received from the telephone set 1 by a character recognition function contained in its inside, converts the characters into text data and transmits this text data to the telephone set 1, which receives the text data transmitted from the server 2.

CLAIMS

[Claim(s)]

[Claim 1] In the personal digital assistant equipment which accesses the server which has a character recognition function through a communication network An acquisition means to acquire the image data in which the alphabetic character is contained, and a display means to display the image data acquired by said acquisition means, A range assignment means to specify the range of the alphabetic character field included in the displayed image data, A transmitting means to transmit the range information on the alphabetic character field specified by said image data and said range assignment means to said server, Personal digital assistant equipment characterized by having a receiving means to receive from this server by making into text data the alphabetic character recognized by the character recognition function which said server has.

[Claim 2] Said acquisition means is personal digital assistant equipment according to claim 1 characterized by being the camera carried in said personal digital assistant equipment.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to personal digital assistant equipment, and relates to the personal digital assistant equipment which has a camera function in a detail.

[0002]

[Description of the Prior Art] When the alphabetic character currently written to paper etc. was conventionally used as digital data, it was used combining the scanner or the digital camera, and the personal computer, and the personal computer had changed the alphabetic character into text data using the character reader with which the store is equipped.

[0003] For example, by using it combining a scanner and a personal computer explains the case where an alphabetic character is changed into text data. In this case, a scanner and a personal computer are connected through the interface of USB (Universal Serial Bus) etc. And a personal computer controls actuation of a scanner, incorporates to a store the image data read with the scanner, and changes into text data the alphabetic character contained in this image data using a character reader.

[0004] Moreover, by using it combining a digital camera and a personal computer explains the case where an alphabetic character is changed into text data. In this case, a digital camera and a personal computer are connected through the interface of USB etc. And a personal computer incorporates to a store the image data photoed with the digital camera using CCD (Charge Coupled Device) or a photo multiplier, and changes into text data the alphabetic character contained in this image data using a character reader.

[0005]

[Problem(s) to be Solved by the Invention] However, since each needed to be carried in order to use it at a going-out place etc. combining a scanner or a digital camera, and a personal computer as mentioned above, convenience was bad. for this reason -- for example, in order to acquire the interesting text seen at the case where he wants to acquire information, such as Kursbuch at the home of a station, the going-out place, etc., it was difficult to copy text in handwriting and to use text as digital data (text data).

[0006] That is, since he was not able to acquire text easily with a terminal convenient to carry etc. and was not able to use the acquired text as digital data on that spot, wherever the user might be in, when wanting, text needed was acquired simply and he desired to use the acquired text quickly.

[0007] The technical problem of this invention is convenient to acquire text, and is offering the personal digital assistant equipment which can

utilize the acquired text quickly.

[0008]

[Means for Solving the Problem] This invention is equipped with the following descriptions in order to attain such a technical problem. In addition, the configuration corresponding to the gestalt of operation is illustrated as an example by parenthesis writing during explanation of the means shown below. A sign etc. is a drawing reference mark mentioned later.

[0009] This invention to the server (for example, image-processing server 2 shown in drawing 1) which has a character recognition function A communication network In the personal digital assistant equipment (for example, cellular phone 1 shown in drawing 1) accessed through (for example, communication network N shown in drawing 1) An acquisition means to acquire the image data in which the alphabetic character is contained (for example, the camera shown in drawing 1 or the transmitting and receiving circuit section 14 shown in drawing 3), A display means to display the image data acquired by said acquisition means (for example, step S2 shown in the display 13 shown in drawing 3 , and drawing 4), A range assignment means to specify the range of the alphabetic character field included in the displayed image data (for example, step S3 shown in the key input section 12 and drawing 4 which are shown in drawing 3), A transmitting means to transmit the range information on the alphabetic character field specified by said image data and said range assignment means to said server (for example, step S4 shown in the transmitting and receiving circuit section 14 shown in drawing 3 , and drawing 4), It is characterized by having a receiving means (for example, step S7 shown in the transmitting and receiving circuit section 14 shown in drawing 3 , and drawing 4) to receive from this server by making into text data the alphabetic character recognized by the character recognition function which said server has.

[0010] According to this invention, personal digital assistant equipment by having an acquisition means, a display means, a range assignment means, a transmitting means, and a receiving means The image data in which the alphabetic character is contained is acquired, this image data is displayed, the range of an alphabetic character field is specified, the range information on this image data and an alphabetic character field is transmitted to a server, and it receives from this server by making into text data the alphabetic character recognized by the character recognition function which the server concerned has.

[0011]

[Embodiment of the Invention] Hereafter, with reference to drawing, the cellular phone with a camera function which is the gestalt of operation of this invention is explained to a detail. First, a configuration is explained.

[0012] Drawing 1 is drawing showing the whole network-system 100 configuration using the cellular phone 1 (it is hereafter called a cellular phone 1.) with a camera function which is the gestalt of operation of this

invention. As shown in drawing 1 , as for the network system 100, ** is connected with the cellular phone 1 and the image-processing server 2 through communication network N.

[0013] In this network system 100, the cellular phone 1 registers beforehand the telephone number (or the other cellular phones 1 identifiable information) of a cellular phone 1 in order to receive the image-processing service by the image-processing server 2. Moreover, a cellular phone 1 transmits the image data of the object (for example, images, such as paper in which the alphabetic character is written) photoed with the camera 17 to the image-processing server 2 through communication network N, changes it into text data with the character recognition processing program with which the image-processing server 2 is equipped with the alphabetic character contained in image data, and receives this text data from the image-processing server 2.

[0014] In addition, the count DB3 of reception which memorizes the count of reception of the image data to which the image-processing server 2 was transmitted from each cellular phone, The telephone number DB4 which memorizes the telephone number of the cellular phone which can offer image-processing service, It has five accumulating-totals alphabetic characters DB which memorize the accumulating totals of the number of alphabetic characters transmitted to each cellular phone, each information at the time of performing transmission and reception of each cellular phone and data to DB3 and DB5 is memorized, and the telephone number beforehand registered into DB4 from the cellular phone 1 is memorized and managed.

[0015] Moreover, communication network N includes an Internet Service Provider, a base station, etc. which connect them with various communication lines, such as a telephone network, an ISDN circuit network, a dedicated line, a mobile communication network, a communication satellite circuit, and a CATV line network.

[0016] Next, the cellular phone 1 which constitutes the network system 100 shown in drawing 1 is explained with reference to drawing 2 and drawing 3 .

[0017] As drawing 2 is shown in drawing 2 which is drawing showing the appearance configuration of a cellular phone 1, a cellular phone 1 is equipped with the key input section 12 (the function key group 121 containing cursor movement key 121a and decision key 121b and a ten key 122 are included) later mentioned on the front face of case 1A, and the display 13 constituted by LCD (Liquid Crystal Display) etc., and the camera 17 is formed in the upper part of a display 13. Moreover, the elastic antenna 18 is formed in the upper part of case 1A, and an antenna 18 is pulled out when telephoning. Moreover, power supply sections (illustration abbreviation), such as a charge pack, are established in the rear face of case 1A. Each of these components are connected to the electronic circuitry (refer to drawing 3) of the circuit board contained inside case 1A, and actuation of each part is controlled

by CPU11 mentioned later.

[0018] Drawing 3 is the functional block diagram of the electronic circuitry mounted in the circuit board contained inside case 1A. As shown in drawing 3, the cellular phone 1 is constituted by CPU11, the key input section 12, a display 13, the transmitting and receiving circuit section 14 that has an antenna 18, RAM15 and ROM16, and the camera 17, and each part is connected by the bus through CPU11.

[0019] CPU (Central Processing Unit)11 develops the application program specified out of the various application programs corresponding to the system program and the cellular phone 1 which are memorized by ROM16 to RAM15, carries out the temporary storage of the various data according to the various directions or it which is inputted from the key input section 12 to RAM15, performs various processings according to the application program stored in ROM16 according to this input directions and input data, and stores that processing result in RAM15.

[0020] Moreover, CPU11 stores in RAM15 the image data generated with the camera 17 by picture compression methods, such as JPEG (Joint Photographic Expert Group) and PNG (Portable Network Graphics). Moreover, in the text data acquisition processing (refer to drawing 4) mentioned later, if image data is chosen by the key input section 12, CPU11 will make the range of the alphabetic character field included in the image data specify, and will transmit the range information on the selected image data and the specified alphabetic character field to the image-processing server 2. And the alphabetic character contained in image data by the image-processing server 2 is transformed to text data, this text data is received and the text data which received is memorized to RAM15. Moreover, CPU11 displays this text data on a display 13.

[0021] The key input section 12 has the function key group 121 which specifies various functions, and the ten key 122 including notations, such as a figure to "0" - "9" and "*", and "#", and outputs the depression signal by the key stroke to CPU11. In addition, the function key group 121 contains decision key 121b which determines the "starting point" and a "terminal point" of cursor movement key 121a at the time of specifying the range of the alphabetic character field included in image data, and an alphabetic character field.

[0022] A display 13 is constituted by LCD etc. and performs various displays based on the control signal inputted from CPU11.

[0023] It has a modem (MODEM:MOdulator/DEModulator), the RF (Radio Frequency) section, etc., and a transmitting and receiving circuit section 14 modulates with a modem the signal read to RAM15 from CPU11 at the time of transmission of the data (for example, voice data, image data, etc.) to other terminals and image-processing servers 2, in the RF section, it carries out frequency conversion of the modulated signal, and amplifies it. Moreover, at the time of the data (for example, voice data, image data, text data, etc.) reception from other terminals or image-processing servers 2, the received signal is amplified in the RF

section, frequency conversion is carried out, and it restores to the signal by which frequency conversion was carried out with a modem. In addition, in the case of transmission and reception of data (for example, voice data, image data, text data, etc.), the communications protocol corresponding to cellular-phone methods, such as for example, a W-CDMA method, is performed between the base transceiver stations which are not illustrated.

[0024] RAM (Random Access Memory)15 has the work-piece memory area which stores and develops the application program performed by CPU11, a text data acquisition processing program, input directions, input data, a processing result, etc.

[0025] ROM (Read Only Memory)16 is constituted by the flash memory etc., and memorizes the data concerning picture compression programs, such as various programs of operation, such as a system program and various application programs corresponding to the system concerned, and JPEG, PNG, text data acquisition processing programs, and these programs etc.

[0026] A camera 17 is constituted by photo sensors, such as an optical lens and CCD, CMOS, etc. which consist of glass or plastics, changes into an electrical signal the static image inputted through an optical lens by the photo sensor, and generates image data.

[0027] Antennas 18 are reverse F antennas, a whip antenna, etc., and they turn and send the signal outputted from a transmitting and receiving circuit section 14 to a base transceiver station while they receive the radio signal transmitted from the base transceiver station which is not illustrated.

[0028] Next, the image-processing server 2 which constitutes the network system 100 shown in drawing 1 is explained.

[0029] The image-processing server 2 makes communication link connection with a cellular phone 1. Various data Means of communications, such as a communication module corresponding to a modem, a terminal adopter, or various mobile communication modes in order (for example, to receive image data, text data, etc.), [transmit and] In order to carry out execution control of the various processings, such as transform processing (refer to drawing 5) which changes the alphabetic character contained in image data based on the range information on the image data which received from the cellular phone 1, and the specified alphabetic character field into text data, For example, had control means, such as CPU, and the storage means which memorized the data generated by various system programs, an application program (for example, character recognition processing program), a transform-processing program, and each program, for example, it is a general purpose computer.

[0030] Next, actuation is explained. Drawing 4 is a flow chart which shows the flow of the text data acquisition processing performed by CPU11 of a cellular phone 1, and drawing 5 is a flow chart which shows

the flow of transform processing performed by the image-processing server 2. In addition, transform processing performed by the image-processing server 2 is batch processing performed when the range information on image data and the specified alphabetic character field is received from a cellular phone 1. Moreover, drawing which explains actuation of each processing of drawing 4 and drawing 5 to drawing 6 - drawing 10 is shown.

[0031] First, an object (for example, images, such as paper in which the alphabetic character is written) is photoed with a camera 17, and the cellular phone 1 stores the generated image data in RAM15 by picture compression methods, such as JPEG or PNG, as shown in drawing 6.

[0032] And in text data acquisition processing of drawing 4, CPU11 of a cellular phone 1 displays Cursor K while displaying the selected image data on a display 13 like drawing 7 (step S2), if image data is chosen by the key input section 12 from the image data stored in RAM15 (step S1). Moreover, the message at this time, for example, "please move cursor and determine the starting point" etc., is displayed on a display 13, and the positional information of the "starting point" determined by cursor movement key 121a and decision key 121b is received.

[0033] Subsequently, if the starting point of the image data displayed on the display 13 is determined by the key input section 12, like drawing 8, CPU11 will display a message, such as Cursor K and "please move cursor and determine a terminal point", on a display 13, and will receive the positional information of the "terminal point" determined by cursor movement key 121a and decision key 121b. And if the "starting point" and a "terminal point" are determined (step S3) (i.e., if the square which made the vertical angle this the "starting point" and a "terminal point" is specified as an alphabetic character field), the range information on the selected image data and the specified alphabetic character field will be transmitted to the image-processing server 2 (step S4). Thereby, transform processing of drawing 5 is performed by the image-processing server 2.

[0034] In transform processing of drawing 5, if the image-processing server 2 receives the range information on the image data from a cellular phone 1, and the specified alphabetic character field, and the telephone number (or the other cellular phones 1 identifiable information) of a cellular phone 1 (step S11), the received telephone number will distinguish whether the telephone number DB4 memorizes or it is set as the object of image-processing service (step S12).

[0035] Here, if the received telephone number is not memorized by the telephone number DB4 (step S12; NO), the image-processing server 2 transmits the notice of a purport which cannot use service to a cellular phone 1 (step S13), and ends transform processing of drawing 5.

[0036] Moreover, if the received telephone number is memorized by the telephone number DB4 (step S12; YES), the image-processing server 2 will change the alphabetic character of the specified range into text data

with a character recognition processing program based on the range information on the image data which received from the cellular phone 1, and the specified alphabetic character field, as shown in drawing 9 (step S14). And while counting with the counter which does not illustrate the number of alphabetic characters contained in this text data and adding to five accumulating-totals alphabetic characters DB, the count of reception "1" is added to the count DB3 of reception of the data corresponding to this cellular phone 1 (step S15). And text data is transmitted to a cellular phone 1 (step S16), and transform processing of drawing 5 is ended.

[0037] If data are transmitted from the image-processing server 2 by above-mentioned transform processing, in drawing 4 , CPU11 of a cellular phone 1 will receive data from the image-processing server 2, and will distinguish whether this data is the notice of a purport which cannot use service (step S5).

[0038] Here, when the notice of a purport which cannot use service from the image-processing server 2 is received (i.e., when image-processing service cannot be used), (step S5; YES) and a cellular phone 1 display that (for example, message of "being unable to use image-processing service") on a display 13 (step S6), and end text data acquisition processing of drawing 4 .

[0039] Moreover, if the notice of a purport which cannot use service from the image-processing server 2 is not received here Namely, when image-processing service can be used, while receiving the text data transmitted from (step S5; NO) and the image-processing server 2 (step S7) and storing the text data which received in RAM15 As shown in drawing 10 , this text data is displayed on a display 13 (step S8), and text data acquisition processing of drawing 4 is ended.

[0040] As mentioned above, a cellular phone 1 generates the image data of the object photoed with the camera 17, specifies the alphabetic character field of the alphabetic character contained in this image data by the key input section 12, and transmits the range information on this image data and the specified alphabetic character field to the image-processing server 2.

[0041] Moreover, the image-processing server 2 will change the alphabetic character of the specified range into text data with a character recognition processing program based on the image data and the specified range information received from the cellular phone 1, if the range information on the image data transmitted from the cellular phone 1 and the specified alphabetic character field and the telephone number of a cellular phone 1 are received and the received telephone number is memorized by the telephone number DB4. And while counting with the counter which does not illustrate the number of alphabetic characters contained in this text data and adding to five accumulating-totals alphabetic characters DB, the count of reception "1" is added to the count DB3 of reception of the data corresponding to this cellular phone 1,

and text data is transmitted to a cellular phone 1.

[0042] And a cellular phone 1 receives the text data transmitted from the image-processing server 2, and memorizes it to RAM15. Moreover, a cellular phone 1 displays text data on that display 13, and uses this data.

[0043] Therefore, it becomes unnecessary for a cellular phone 1 to equip the storage (for example, ROM16) with a character reader, and it can save the storage capacity of storage. Moreover, since the image data of the object (for example, images, such as paper in which the alphabetic character is written) photoed with the camera 17 is memorizable as text data, the storage capacity of storage can be saved.

[0044] Moreover, since text can be used as text data, processing of data, transmission, etc. can be processed quickly and easily, and convenience is good.

[0045] although the gestalt of this operation has not described the charge of use of the image-processing service which the image-processing server 2 offers, you may enable it to charge according to the use situation of each personal digital assistant which resembled the count DB3 of reception with which the image-processing server 2 is equipped, and five accumulating-totals alphabetic characters DB, and was remembered to be them In this case, you may decide to include the charge of service use in telephone charges etc., and to charge it for example.

[0046] Moreover, although the image photoed with the camera 17 formed in the cellular phone 1 was processed with the gestalt of this operation, the attached file of the image of the electronic mail memorized to RAM of a cellular phone may be used.

[0047] Moreover, although text data had been obtained with the gestalt of this operation by transmitting the range information on image data and the specified alphabetic character field to the image-processing server 2 from a cellular phone 1, if the image-processing server 2 supports the data of facsimile, it is applicable to the data of the facsimile transmitted to the cellular phone 1.

[0048] Moreover, a cellular phone 1 may enable it to transmit and receive the text data which received from the image-processing server 2 with the gestalt of this operation using a cellular phone, or other terminals and electronic mails. However, in this case, as shown in drawing 11 , suppose that it has a mail server 6 further. Moreover, at this time, as shown in drawing 11 , processing may be distributed by two or more servers, and you may decide to perform each processings (for example, an image processing, e-mail transmitting processing, etc.) by one server.

[0049] Moreover, although it decided to send immediately the text data obtained by the image-processing server to a cellular phone with the gestalt of this operation, you may decide to transmit, when it is not limited to this but there is a demand from a cellular phone.

[0050] Moreover, although it decided to offer image-processing service

to the cellular phone 1 with which the telephone number (or the other cellular phones 1 identifiable information) is registered beforehand with the gestalt of this operation, in case service is offered without not being limited to this but limiting the cellular phone which offers image-processing service, an advertisement is added, and you may make it heighten an effect of advertising.

[0051] Moreover, with the gestalt of this operation, although the cellular phone with a camera function was made into the example, it is not limited to this but you may apply to the Personal Digital Assistant equipped with a camera function and communication facility.

[0052]

[Effect of the Invention] Since the alphabetic character contained in the image data acquired by the external terminal or the internal function is utilizable as text data according to this invention, while being able to save the memory capacity of a store, processing of data, transmission, etc. can be processed quickly and easily, and convenience is good. Moreover, since a server has a character recognition function, it becomes unnecessary to equip personal digital assistant equipment with a character reader, and the storage capacity of storage can be saved further.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the whole network-system 100 configuration.

[Drawing 2] It is drawing showing the appearance configuration of a cellular phone 1.

[Drawing 3] It is the functional block diagram of the electronic circuitry mounted in the circuit board contained inside case 1A.

[Drawing 4] It is the flow chart which shows the flow of the text data acquisition processing performed by the cellular phone 1.

[Drawing 5] It is the flow chart which shows the flow of transform processing performed by the image-processing server 2.

[Drawing 6] It is drawing showing the case where photo an object (for example, images, such as paper in which the alphabetic character is written) with a camera 17, and it stores in RAM15 of a cellular phone 1.

[Drawing 7] In the display 13 of a cellular phone 1, it is an example of a display at the time of determining the range of the alphabetic character field included in image data (starting point).

[Drawing 8] In the display 13 of a cellular phone 1, it is an example of a display at the time of determining the range of the alphabetic character field included in image data (terminal point).

[Drawing 9] It is an example at the time of changing an alphabetic

character (image data) into text data.

[Drawing 10] It is an example of a display when a cellular phone 1 receives the text data changed by the image-processing server 2.

[Drawing 11] It is drawing showing the application of the gestalt of this operation.

[Description of Notations]

1 Cellular Phone

12 Key Input Section

13 Display

14 Transmitting and Receiving Circuit Section

15 RAM

16 ROM

17 Camera

18 Antenna

2 Image-Processing Server

3 Count DB of Reception

4 Telephone Number DB

5 The Number DB of Accumulating-Totals Alphabetic Characters

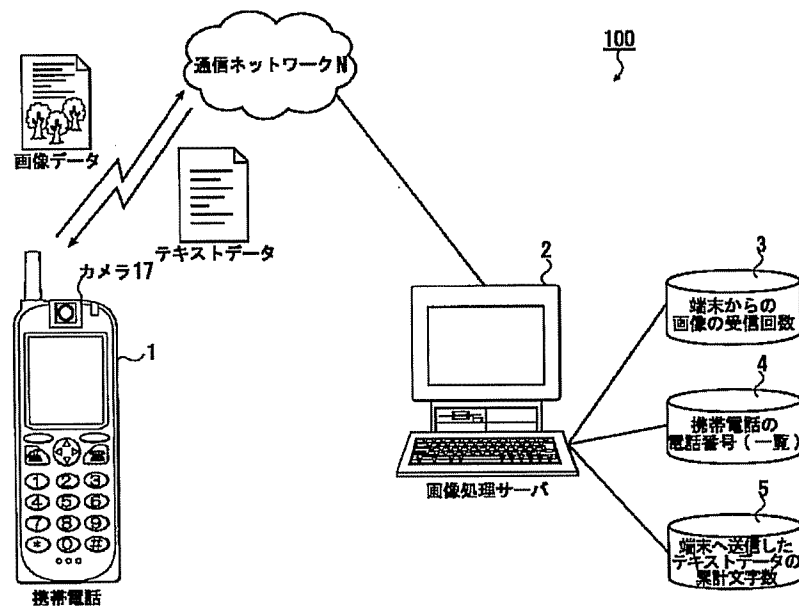
100 Network System

K Cursor

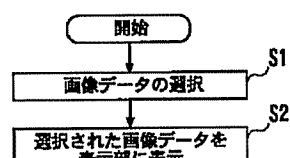
N Communication network

DRAWINGS

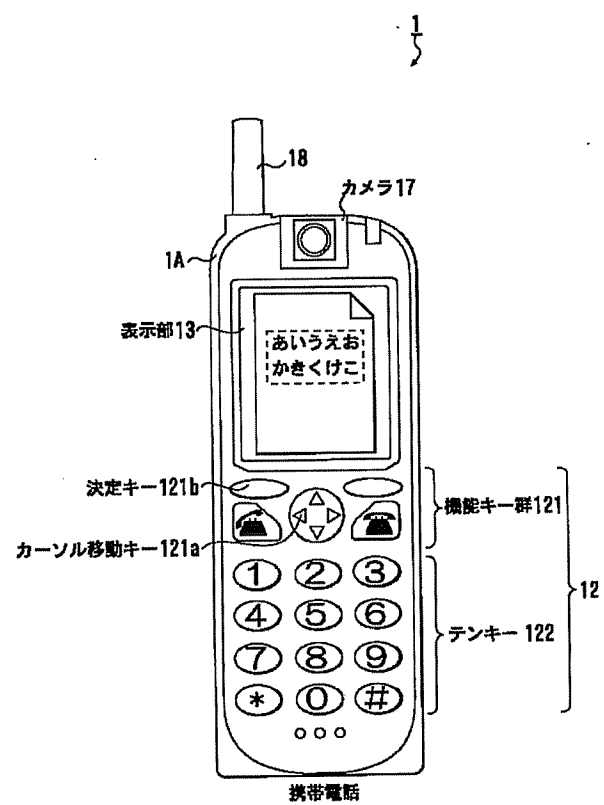
[Drawing 1]



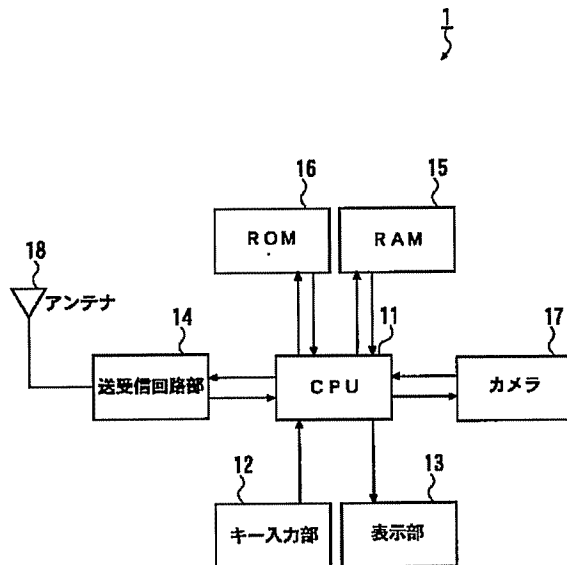
[Drawing 4]



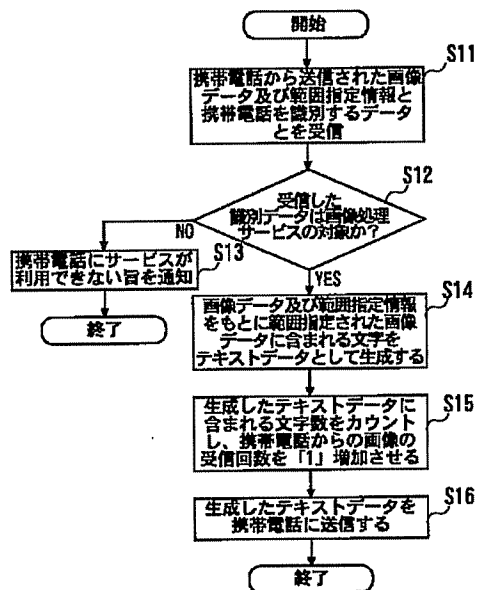
[Drawing 2]



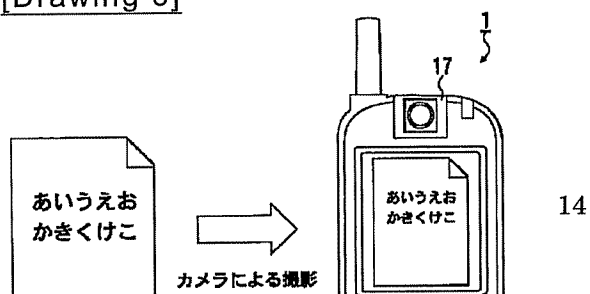
[Drawing 3]



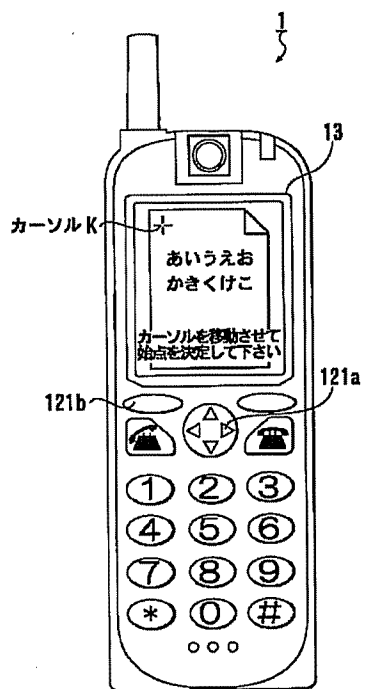
[Drawing 5]



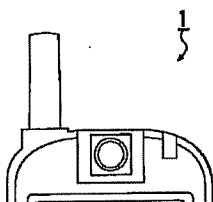
[Drawing 6]



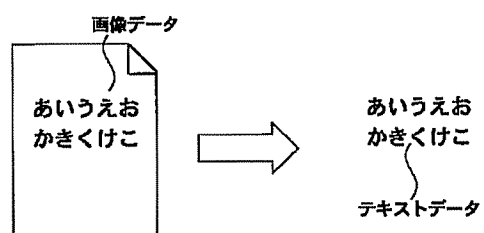
[Drawing 7]



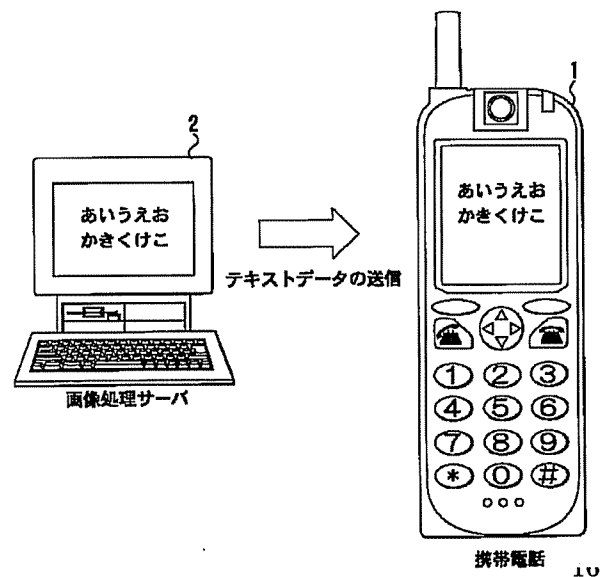
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Drawing 11]

